IN THE SPECIFICATION

Please amend page 1 by inserting the following heading between the title of the invention and the first paragraph:

"FIELD OF THE INVENTION"

Please amend page 1 by inserting the following heading between the first and second paragraphs:

"BACKGROUND OF THE INVENTION"

Please amend page 2 by inserting the following heading on line 8:

"SUMMARY OF THE INVENTION"

Please amend page 4 by inserting the following heading on line 14:

"BRIEF DESCRIPTION OF THE DRAWINGS"

Please amend page 4 by inserting the following heading on line 25:

"DETAILED DESCRIPTION OF THE INVENTION"

Please amend page 7 by inserting the following language between the "CLAIMS" heading and claim 1:

"I/We claim:"

Please amend pages 2-4 by deleting the following text beginning on page 2 line 20 and ending on page 4 line 2 as follows:

"~~In the preferred embodiment, the resilient coupling is located within a drive mechanism for transferring torque between the members. For example, one member may comprise one or more recesses each for receiving a detent of the other member for transferring torque between the members, the resilient coupling being located between opposing surfaces of the or each recess and detent.~~

~~The means for inhibiting torsional vibrations and noise thus preferably comprises at least one resilient member located between opposing surfaces of the~~

~~members. In the preferred embodiment, a plurality of resilient members are each located between respective opposing surfaces of the members.~~

~~The resilient members may be conveniently provided by a number of springs, for example, metal torsional springs or translational springs including flat, disc and coil springs acting along a tangential line within the radius of the member. Alternatively, repelling magnets could be used with the resulting stiffness being proportional to the magnetic flux. Finally in some applications use of viscoelastic materials may be appropriate.~~

~~Providing means such as a spring between the hub member and the annular member can allow the torsional stiffness of the gear to be controlled. By providing a spring between the members the inertia that is accelerated and decelerated due to eccentricity is reduced. As the gear is accelerated, the spring is designed to compress so that the shaft can remain at a constant speed. This isolation of the shaft from eccentricity induced gear acceleration reduces the oscillations in drive torque and will increase the eccentricity at which the gears will leave mesh.~~

~~In the event of an external torque other than that resulting from gear eccentricity causes the gears to leave mesh, the spring will act to absorb the impact that occurs as the gears come back into mesh and thus act to bring the assembly back to the linear, in-mesh, operating region. In support of this argument, non-linear analysis of tooth-to-tooth slapping has shown that the gears can only leave mesh if the overall torsional stiffness is above a certain level. In other words, low torsional stiffness rotating machinery ('weak shafts') would always remain in mesh.~~

~~This aspect of the invention extends to a vacuum pump comprising at least two shafts connected together by a gear assembly as aforementioned. For example, a high-speed Roots blower vacuum pump includes Roots profile rotors rotating in a pumping chamber with a 1 :1 gear ratio. Torsional vibrations between the gears can be a problem when operating at maximum speed and ultimate pressure (the best vacuum achievable by the pump). The noise generated has been shown to depend on gear eccentricity, and is present with the available manufacturing gear wheel tolerances. An experimental prototype gear according to the invention fitted to the driven shaft has been shown to eliminate gear tooth-to-tooth slapping with gear eccentricities that normally result in a pump prone to this noise problem.~~"

Please amend page 4 beginning on line 30 as follows:

"...teeth 16. There is a resilient coupling located between the hub member 12 and the annular member 14. In the preferred embodiment, the resilient coupling is located within a drive mechanism for transferring torque between the members. For example, one member may comprise one or more recesses each for receiving a detent of the other member for transferring torque between the members, the resilient coupling being located between opposing surfaces of the or each recess and detent. The means for inhibiting torsional vibrations and noise thus preferably comprises at least one resilient member located between opposing surfaces of the members. In the preferred embodiment, a plurality of resilient members are each located between respective opposing surfaces of the members. The shaft received by the hub member 12 may be either a drive shaft or a driven shaft of the pump. A bearing assembly 18 is carried by the bore of the annular member 14 and the shaft."

Please amend page 5 beginning on line 14 by inserting the following text:

"The resilient members may be conveniently provided by a number of springs, for example, metal torsional springs or translational springs including flat, disc and coil springs acting along a tangential line within the radius of the member. Alternatively, repelling magnets could be used with the resulting stiffness being proportional to the magnetic flux.

Providing means such as a spring between the hub member and the annular member can allow the torsional stiffness of the gear to be controlled. By providing a spring between the members the inertia that is accelerated and decelerated due to eccentricity is reduced. As the gear is accelerated, the spring is designed to compress so that the shaft can remain at a constant speed. This isolation of the shaft from eccentricity-induced gear acceleration reduces the oscillations in drive torque and will increase the eccentricity at which the gears will leave mesh.

As shown in Figure 3, flat springs 24a, 24b are located within each recess 22 between the facing radial surfaces 26, 28 of the detent 20 and recess 22. The springs 24a, 24b have a stiffness chosen to substantially..."

Please amend page 6 beginning on line 9 as follows:

"In the event of an external torque other than that resulting from gear eccentricity causes the gears to leave mesh, the spring will act to absorb the impact that occurs as the gears come back into mesh and thus act to bring the assembly back to the linear, in-mesh, operating region. In support of this argument, non-linear analysis of tooth-to-tooth slapping has shown that the gears can only leave mesh if the overall torsional stiffness is above a certain level. In other words, low torsional stiffness rotating machinery ('weak shafts') would always remain in mesh.

This aspect of the invention extends to a vacuum pump comprising at least two shafts connected together by a gear assembly as aforementioned. For example, a high-speed Roots blower vacuum pump includes Roots profile rotors rotating in a pumping chamber with a 1 :1 gear ratio. Torsional vibrations between the gears can be a problem when operating at maximum speed and ultimate pressure (the best vacuum achievable by the pump). The noise generated has been shown to depend on gear eccentricity, and is present with the available manufacturing gear wheel tolerances. An experimental prototype gear according to the invention fitted to the driven shaft has been shown to eliminate gear tooth-to-tooth slapping with gear eccentricities that normally result in a pump prone to this noise problem.

While the foregoing description and drawings represent the preferred embodiments of the present invention, it will be apparent to those skilled in the art that various changes and modifications may be made therein without departing from the true spirit and scope of the present invention."